California Department of Health Services
Recreational Program

Public Health Fact Sheet

Recommendations for the Management of Fecal Accidents in Public Swimming Pools

1. When a fecal accident occurs, close the pool(s) and instruct all pool users to exit the pool(s) immediately. Do not allow anyone to enter the contaminated pool(s) until all the following steps are completed.

2. Remove as much of the fecal material as possible using a net or scoop and dispose of it in a sanitary manner. Clean and disinfect the net or scoop (e.g., after cleaning, leave the net or scoop immersed in the pool during the disinfection period). Vacuuming stool from the pool is not recommended. If the pool is vacuumed, waste should be directed to a sanitary sewer and not through the filtration system.

3. A. If the fecal accident involves a "formed stool" (solid, not liquid), raise the free available concentration to 2 mg/L (parts per million) and maintain the pH between 7.2 and 7.5 for at least 25 minutes. If a free available chlorine concentration of 3 mg/L is present, the time can be reduced to 19 minutes.

   B. If the fecal accident involves "diarrhea or a loose stool," raise the free available chlorine concentration to 20 mg/L and maintain the pH between 7.2 and 7.5 for at least 8 hours. This is equivalent to a CT value of 9,600. The CT value is the concentration of chlorine in mg/L multiplied by the time in minutes. In this case, a 20 mg/L concentration of chlorine maintained in a pool for 8 hours or 480 minutes will result in a CT value of 9,600 (480 minutes X 20 mg/L). Any combination of chlorine concentration and time resulting in a CT value of 9,600 or greater can be used to achieve disinfection.

   For fecal accidents involving "diarrhea or loose stools," the filter should be thoroughly backwashed to a sanitary sewer after the CT value has been reached and before the pool is reopened.

4. During the entire treatment period, ensure that the pH is maintained between 7.2 and 7.5. The pH may be affected if additional chlorine is added to the pool.

5. Ensure that the filtration system is operating and the proper free available chlorine concentration is maintained throughout the treatment period. Ensure free available chlorine concentrations are found throughout all areas of the pool or co-circulating pools by sampling in at least three widely spaced locations away from return water inlets.

6. The pool may be reopened after the required time/concentration or CT value has been achieved and the free available chlorine residual is below 5.0 mg/L.

7. If the pool is a low volume pool, such as a spa pool or wading pool, the pool can be drained.

   The pool should be refilled, the water balanced and the proper time/concentration or CT value achieved before being reopened.

8. Establish a fecal accident log. Document each fecal accident by recording the following information.

   a. Date
   b. Time of the event
   c. Formed stool or diarrhea
   d. Free available chlorine concentration and pH at the time of observation of event
   e. Free available chlorine and pH before reopening the pool
   f. Contact time
   g. Procedures followed to respond to the fecal accident, including the process used to increase the free chlorine residual if necessary.

9. In the event of contamination with vomitus in a pool, the procedures for a “formed stool” (3A above) should be followed.

Notes:

- Fecal accident pool closure procedures are based on recommendations by the Centers for Disease Control and Prevention and Recreational Health Committee of the California Directors of Environmental Health.

- All contact times assume a water temperature of 25°C (77°F).

- Theoretical Pool Closure Times for 99.9% Inactivation of Giardia Cysts by Free Available Chlorine, pH7.5, 25°C derived from the EPA’s Disinfection Profiling and Benchmarking Guidance Manual.

- The “short pool closure time” is the chlorine concentration/contact time theoretically required to inactivate Giardia cysts. The “long pool closure time” is the chlorine concentration/contact time theoretically required to inactivate Crytosporidium oocysts.

- Non-chlorine disinfectants are not addressed and should not be used because there is limited pathogen inactivation data available for these compounds.

- The impact of chlorine stabilizers such as chlorinated isocyanurates on pathogen inactivation and disinfection measurement is unclear and warrants further investigation. Increased contact time may be desirable.

- Many conventional test kits cannot measure free available chlorine in a range that includes 20 mg/L. Use chlorine test strips, kits that can measure in this range or make dilutions using a standard DPD (N,N-diethyl-pphenylenediamine) test kit and chlorine-free water.

- High levels of chlorine may damage pool equipment. Exercise caution or consult with an experienced aquatic professional.